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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,025	11/20/2003	Tomohiro Oshiyama	KOT-0085	8793

7590 05/15/2006

CANTOR COLBURN LLP  
55 Griffin Road South  
Bloomfield, CT 06002

EXAMINER

THOMPSON, CAMIE S

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/718,025

Applicant(s)

OSHIYAMA ET AL.

Examiner

Camie S. Thompson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on Amendment filed 2/15/06 & 2/28/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-35 and 43-51 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-14 and 22-25 is/are allowed.
- 6) ☒ Claim(s) 1-7, 15-21 and 43-51 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. Applicant's amendment and accompanying remarks filed February 15, 2006 and February 28, 2006 have been acknowledged.
2. Examiner acknowledges amended claims 1, 8, 15, 49 and 50.
3. Examiner acknowledges cancelled claims 35-42.
4. The rejection of claims 1-14 under 35 U.S.C. 112, second paragraph has been withdrawn due to applicant's amended claims 1 and 8.
5. The provisional rejection of claims 1 and 6-7 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over U.S. Application 10/718,360 is withdrawn due to applicant's submission of the terminal disclaimer.

### ***Claim Objections***

6. Claim 22 is objected to because of the following informalities: Insert the term "element" after the term "electroluminescent". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
8. Claim 45 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 45 is rendered indefinite because it is unclear as to whether or not the claim is independent of dependent. Claim 45 recites a compound represented by formula A above. Formula A above is recited in a different claim.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

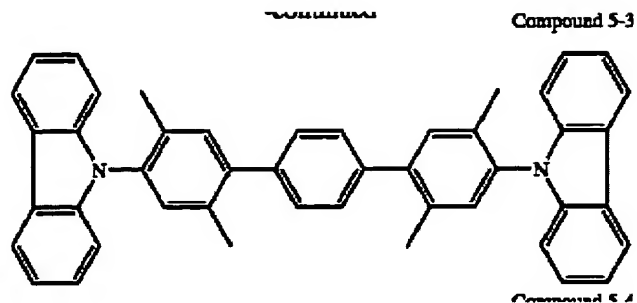
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuri et al., U.S.

Patent Number 6,960,364

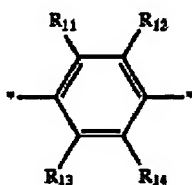
Suzuri discloses an electroluminescent device comprising a substrate and provided thereon, a light emission layer and at least one layer of a hole injecting layer, a hole transporting layer, an electron injecting layer and an electron transporting layer (see Figures 1&2 and column 5, lines 51-column 6, line 11). Additionally, the reference discloses that the light emission layer comprises a host and phosphorescent dopant such as an iridium complex or platinum complex (see column 6, lines 12-64). The Suzuri reference also discloses that a hole blocking layer can be present and can comprise an oxadiazole derivative (see column 8, lines 49-68 and column 10, lines 1-13). Also, the reference discloses that hole injecting layer can comprise a compound such as compound 5-3,

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. The Suzuri reference reads on the instant

formula (a)

claims when X<sub>1</sub> of instant claims is

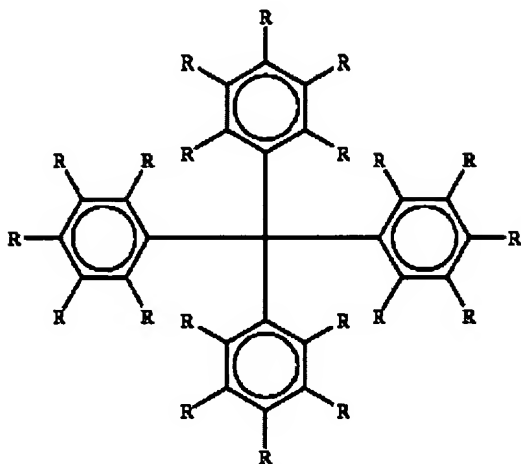
. Column 23,

lines 65-68 of the reference discloses that the light emission materials can include a conjugated polymer, a non-conjugated polymer or an amorphous low molecular weight compound.

Claims 15-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Thoms et al., U.S. Pre Grant Publication 2003/0205696.

Thoms discloses a guest-host system suitable for organic light emitting devices. Additionally, the reference discloses a typical organic light-emitting device comprising one or more layers of emissive material between an anode and a cathode (see paragraphs 0001-0004). The reference discloses a host material such as

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wherein at least two R are carbazole or

substituted carbazole (see paragraphs 0061-0062). The reference reads on the instant claims and formulae H4 of the present invention. The Thoms reference reads on the instant claims when Ar<sub>10</sub> and Ar<sub>11</sub> of the instant claims are each a divalent aromatic hydrocarbon group and R<sub>h5</sub> and R<sub>h6</sub> are each a substituted or unsubstituted aryl group. Additionally, the reference discloses a suitable guest may be a phosphorescent emitter having a wavelength shorter than about 500 nm, having a lower first excited triplet state higher than the host compound (paragraph 0062). Paragraph 0058 discloses an exciton blocking layer comprising bathocuproine. Paragraph 0047 of the reference discloses that Irppy<sub>3</sub> can be used as the phosphorescent emitter.

11. Claims 43-51 are rejected under 35 U.S.C. 102(e) as being anticipated by Oshiyama et al., U.S. Pre Grant Publication 2003/0198831.

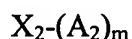
The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

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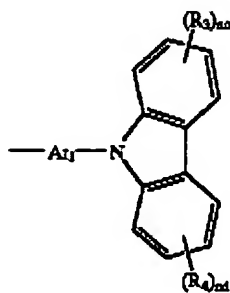
inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Oshiyama discloses an organic electroluminescent element comprising a hole transporting layer, a light emission layer containing a host compound and a phosphorescent compound, a hole blocking layer and an electron transporting layer (see paragraph 0019). Additionally, the reference discloses that the phosphorescent compound is an iridium complex, an osmium complex or platinum complex (see paragraph 0023). Paragraph 0008 of the reference discloses that the host compound can be a carbazole derivative such as CBP (also see paragraph 0111).

12. Claims 8-14 and 22-25 are allowed. The prior art does not provide for an organic electroluminescent element comprising an anode, a cathode and a component layer including a light emission layer, the component layer being provided between the anode and the cathode, wherein the component layer contains a compound represented by formula 3,



wherein  $A_2$  represents a group represented by formula 4, provided that plural  $A_2$  may be the same or different,

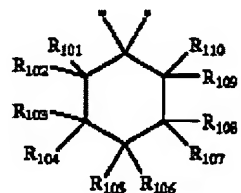


Formula 4

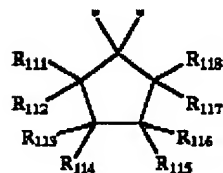
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wherein  $Ar_2$  represents a divalent aromatic hydrocarbon or aromatic heterocyclic group;  $R_3$  and  $R_4$  independently represents a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryloxy group, a cyano group, a hydroxyl group, a substituted or unsubstituted alkenyl group, or a halogen atom;  $nc$  and  $nd$  independently represent an integer of from 1 to 4;  $m$  represents an integer of 2; and  $X_2$  represents a group represented by formula (l), (m), (n), or (o),

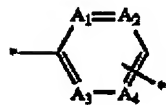
Formula (l)



Formula (m)



Formula (n)



Formula (o)



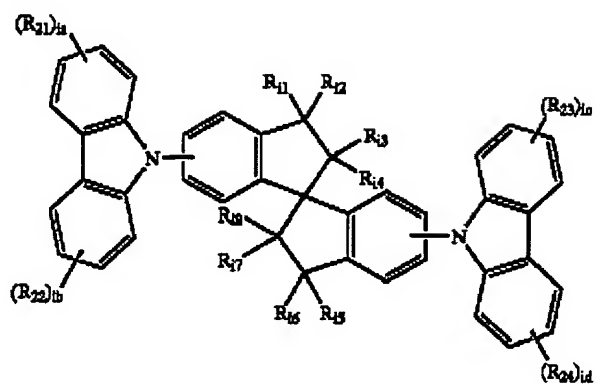


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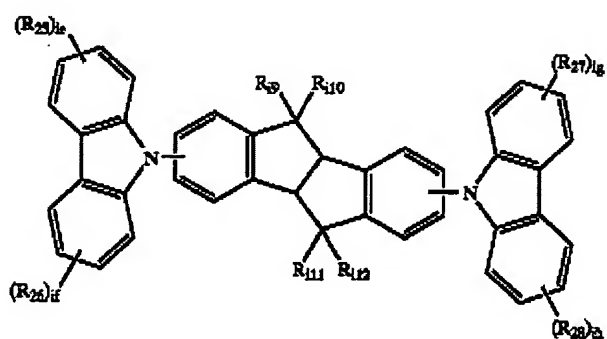
wherein  $R_{101}$  and  $R_{110}$  independently represent a hydrogen atom, an alkyl group, or an alkoxy group, provided that  $R_{101}$  and  $R_{110}$  does not simultaneously hydrogen atoms, and any two  $R_{101}$  and  $R_{110}$  do not combine with each other to form a ring;  $R_{111}$  and  $R_{118}$  independently represent a hydrogen atom, an alkyl group, or an alkoxy group;  $A_1$ ,  $A_2$ ,  $A_3$  and  $A_4$  independently represent  $-C(R_{k1})=$  or  $-N=$ , in which  $R_{k1}$  represents a hydrogen atom or an alkyl group, provided that at least one a  $A_1$ ,  $A_2$ ,  $A_3$  and  $A_4$  is  $-N=$ ;  $A_5$ ,  $A_6$ ,  $A_7$  and  $A_8$  independently represents  $-C(R_{k2})=$  or  $-N=$ ;  $X_b$  represents  $-N(R_{k3})=$  or  $-Si(R_{k4})(R_{k5})-$ , which  $R_{k2-k5}$  independently represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryloxy group, a cyano group, a hydroxyl group, a substituted or unsubstituted alkenyl group, or a halogen atom; and “\*” represents a linkage site.

Claims 22-35 are allowed. The prior art does not provide for an organic electroluminescent element comprising an anode, a cathode and a component layer including a light emission layer, the component layer being provided between the anode and the cathode, wherein the component layer contains a compound represent by formulae I1, I2, I3, J1 or J2

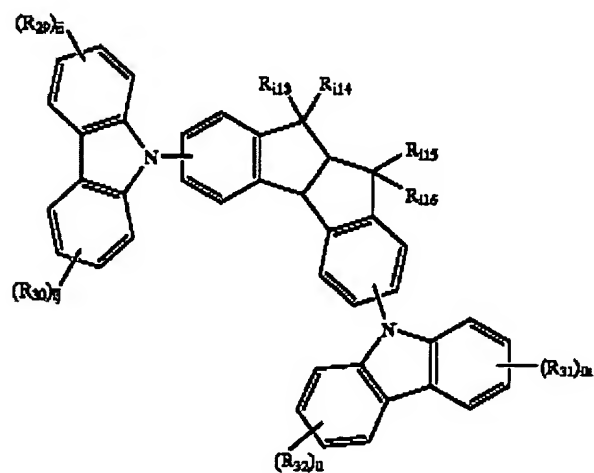
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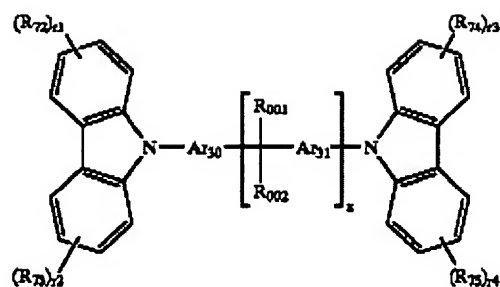
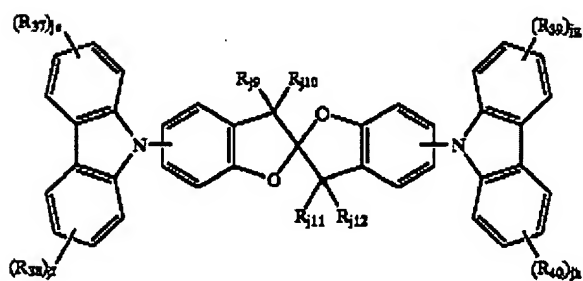
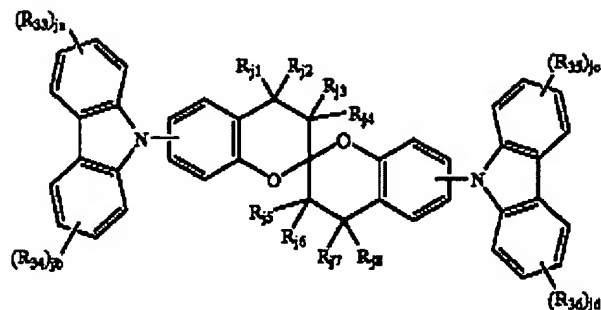
[0066] Formula I2



[0067] Formula I3



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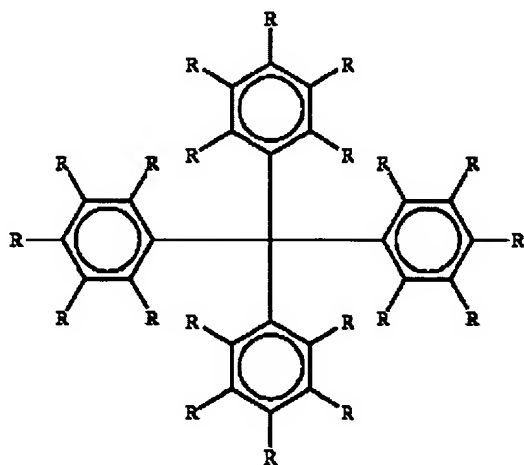
wherein  $R_{11-116}$  independently represent a hydrogen atom, an alkyl group, a cycloalkyl group, an aralkyl group, an alkoxy group or a halogen atom;  $R_{21-32}$  independently represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aryl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryloxy group, a cyano group, a hydroxyl group, a substituted or unsubstituted alkenyl group, or a halogen atom; and  $i$  and  $j$  independently represent an integer of from 1 to 4;  $R_{j1-j12}$  independently represents a hydrogen atom, an alkyl group, a cycloalkyl group, an aralkyl group, an alkoxy group or a halogen atom;  $R_{33-40}$  independently represent a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted cycloalkyl group, a substituted or unsubstituted aryl group, a

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substituted or unsubstituted aralkyl group, a substituted or unsubstituted alkoxy group, a substituted or unsubstituted aryloxy group, a cyano group, a hydroxyl group, a substituted or unsubstituted alkenyl group, or halogen atom; and ja-jh independently represent an integer of from 1 to 4.

### *Response to Arguments*

13. Applicant's arguments filed February 15, 2006 and February 28, 2006 have been fully considered but they are not persuasive. Applicant argues that the Thoms reference does not disclose or suggest the instant claims. Thoms discloses a host material that comprises carbazole



groups attached to


wherein a carbazole group

can be attached to the third R of the 2<sup>nd</sup> and 4<sup>th</sup> phenyl groups. The Thoms reference reads on formula H4 when Ar<sub>10</sub> and Ar<sub>11</sub> of the instant claims are each a divalent aromatic hydrocarbon group and R<sub>h5</sub> and R<sub>h6</sub> are each a substituted or unsubstituted aryl group. The Thoms rejection is maintained.

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Any inquiry concerning this communication or earlier communication from the examiner should be directed to Camie S. Thompson whose telephone number is (571) 272-1530. The examiner can normally be reached on Monday through Friday from 7:30 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena L Dye, can be reached at (571) 272-3186. The fax phone number for the Group is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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